

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XVIII.

DECEMBER, 1901.

No. 12.

ORIGINAL ARTICLES.

AN ENORMOUS CICATRICAL CYST.

History by HENRY DICKSON BRUNS, M D., New Orleans.

Microscopical Examination and Description by ADOLF ALT, M.D.

THE most interesting specimen, which I owe to the kindness of Dr. Henry Dickson Bruns of New Orleans, and which is to be described in detail in the following, was accompanied by this report:

"C. F. T., a white clerk, aged 22, came to our office on February 16, 1901.

He said that his right eye had been operated on for cataract with iridectomy in October, 1897. In May, 1900, after he had felt pain in the right eye for three or four days, he noticed a swelling at the site of the incision. He has been suffering ever since. The pain was sometimes continuous for three or four days at a time, and at times both eyes hurt him severely.

"On the examination there is found considerable ciliary injection, a marked cystoid cicatrix and ciliary staphyloma. V=0.

"On February 17, 1901, the eye was enucleated in chloroform anæsthesia. No accident. The eye was placed in a 10 per cent. formol solution.

"February 18th. Doing well. Bandage removed. Borax wash frequently used.

"February 21st. Patient returns to his home in the country. All pain and discomfort have disappeared.

"March 2d. A vertical section through the eyeball, passing through the cyst, shows that there is no real staphyloma. It

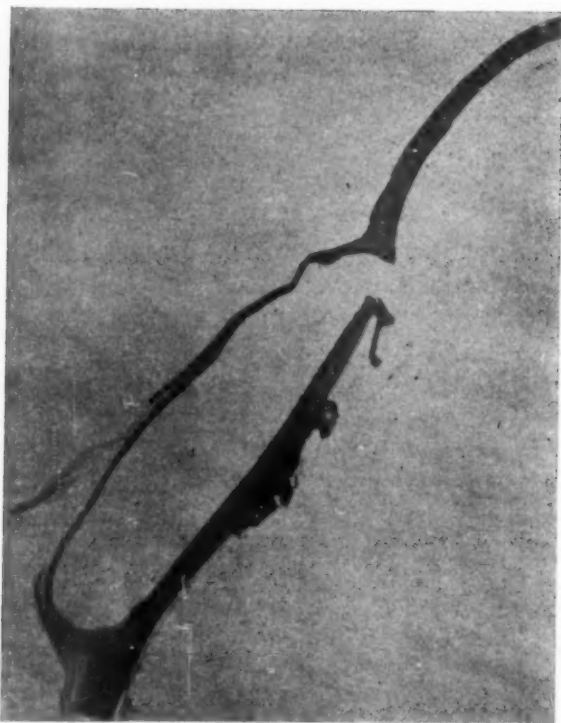


FIG. 1.

is a pure cystoid cicatrix, with the stump of the iris adherent to it."

The macroscopical inspection of the half of the eye which I received showed a really enormous cyst. In the hardened specimen its longest diameter, lying backwards on the sclerotic, was 9 mllm.; its elevation from the sclerotic was 5 mllm. Undoubtedly in life these measures, especially the latter one, were decidedly greater. (See Figs. 1 and 2.)

The outer cyst wall begins in the cornea. The gap between cornea and corneo-scleral tissue is 1 mllm. wide. In

the portion of eyeball which I have examined no adhesion of the iris stump is visible, although this may have been visible in the half which Dr. Bruns retained.

Microscopically it is seen that the cystic formation begins with the corneal tissue well forward of the corneo-scleral juncture—that is, the incision was made well within the clear cornea, and the outer lamellæ are bulged outwards. From here on backwards the outer wall of the cyst consists

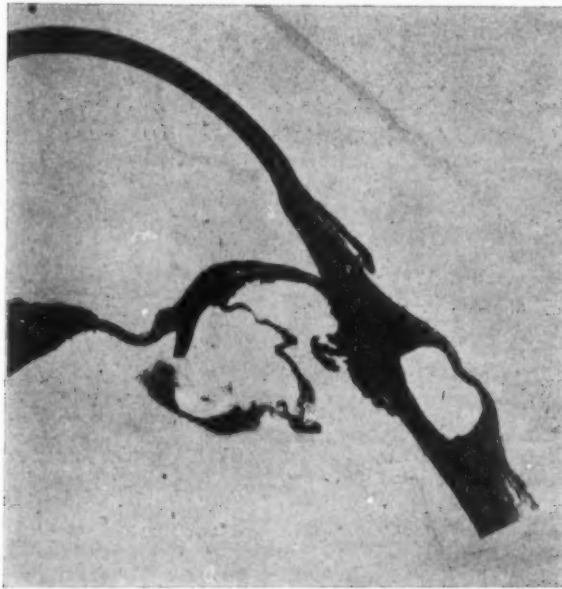


FIG. 2.

Shows cyst, as it appears several millimeters inwards from corneal incision.

chiefly of condensed conjunctival tissue, covered by a small amount of more loose conjunctiva. At the apex of the cyst this outer wall joins the inner wall, which is formed of sclerotic and cornea. (See Fig. 3.) The latter tissue is especially recognized by its layer of Descemet's endothelium. The tissues surrounding the cyst, especially at its apex, show small round cell infiltration. Through the gap the cyst communicates directly with the anterior chamber.

There is no tissue adherent to the anterior lip of the gap. To the posterior lip in some of my sections a piece of wrinkled

lens capsule is agglutinated and folded outwards into the cyst, and there lost in the inner cyst wall.

The whole inside of the cyst is lined with endothelium, or flat epithelium. This lining is not, however, equal in thickness all over. (See Fig. 3.) While in some parts there are only two or three superimposed layers, in other parts eight or more layers can be counted. (See Fig. 4.)

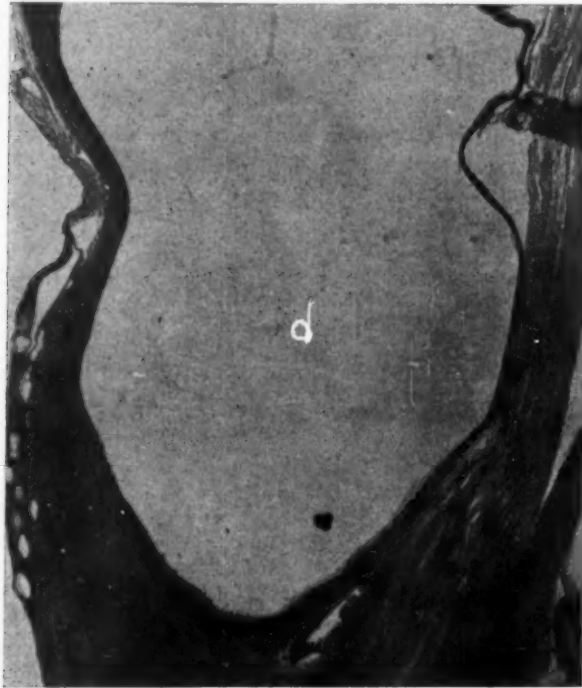


FIG. 3.

In front this lining of the cyst walls continues to a certain distance forward on Descemet's membrane, thus hiding the cells of the endothelial layer of this membrane. Where Descemet's endothelium is visible it shows throughout the condition of stellate retraction of the cell body which I have described as "unrest."

On the posterior lip of the gap the lining of the cyst is continuous with the cell layer covering the wrinkled lens capsule, which may be anterior lens epithelium.

From this condition it is difficult to say what is the origin

of the cells lining the cyst. Are they endothelial and derived from Descemet's endothelium, or epithelial and grown from the anterior epithelial cells of the lens? The fact that their cell body stains more deeply than that of Descemet's endothelial cells, and more like epithelial cells in general, may perhaps be taken as proof that these cells owe their origin to

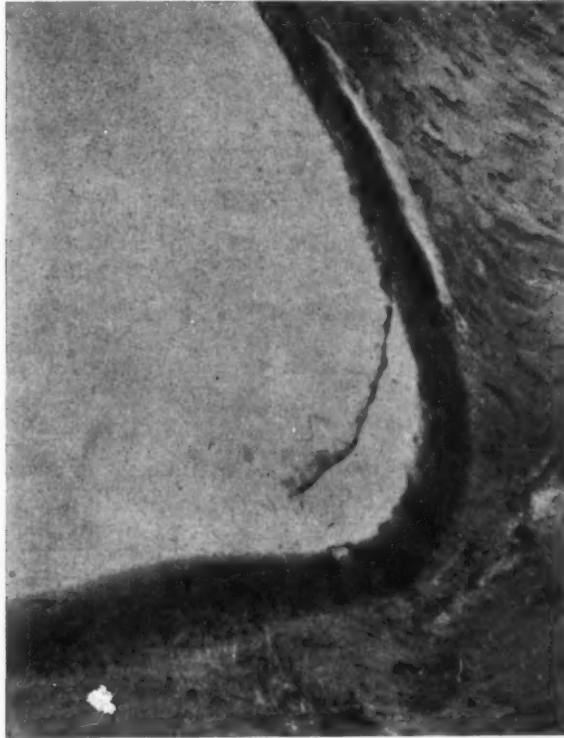


FIG. 4.

the proliferation of the cells of the anterior lens epithelium. On the other hand, it is not at all impossible that these cells lining the cyst sprang originally from the exterior epithelium covering the cornea and conjunctiva.

Nowhere in my specimens do I find an attachment of the iris stump to the cyst wall, nor to the edges of the opening into the anterior chamber. Inside of the scleral lip of the gap lies the atrophic ciliary body, with remnants of lens capsule and lens substance attached to it. There is also a total

blocking of the iris angle in the parts not directly concerned in the operative area, as we find it in glaucoma. What is left of the contents of the cyst are innumerable red blood cells, attached to the cell lining. Red blood cells also adhere to Descemet's endothelium, and are found in clusters in the vitreous body.

From the foregoing it is probably clear why I prefer to call this a case of *cicatricial cyst* instead of calling it a cystoid scar.

The only case of a real cystoid scar with attachment of the iris, which seems to have been nearly as large as the one under consideration, I find in *E. T. Collins' Researches into the Anatomy and Pathology of the Eye*, on Plate VII., Fig. C.

He says: "I have examined several cystoid cicatrices, and find they are always lined by more or less atrophied iris tissue," and then describes the common manner in which a prolapsed iris not only keeps the wound lips from uniting, but also becomes stretched by the intraocular tension so as to form what is called a cystoid scar.

In the case under consideration here the conditions are, however, different. The open gap between the corneal and corneo-scleral tissue was evidently at no time bridged over from within—not even by iris tissue. The lips of the incision wound were evidently held apart by the interposition of some portion of the anterior lens capsule, and thus the closure of the gap was prevented. In consequence, after the conjunctival wound was healed, this membrane was bulged out by the free access of the aqueous humor, and as the intraocular tension increased, the fluids from the interior of the eye burrowed farther and farther back under the conjunctiva, thus causing the formation of a true cyst, which, however, remained throughout in direct communication with the interior of the eyeball.

I have, like Collins, examined quite a number of cystoid scars, but in no case found the conditions to be like they are in this case.

ON THE COMPARATIVE VALUE OF THE VARIOUS
PREPARATIONS OF SILVER IN
OPHTHALMIC WORK.

By GUSTAVUS HARTRIDGE, F.R.C.S.,

Senior Surgeon, Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon and
Lecturer on Ophthalmology, Westminster Hospital.

I WOULD first offer some apology to the members of this Section for the introduction of a paper dealing with therapeutics. I am aware that such a paper cannot be very interesting, because the use of most drugs is surrounded by so many difficulties and fallacies that unless each remedy is applied by one's own hands it is easy to be misled with regard to results, however careful one may be to keep an open mind on the subject. Then in applying remedies to the eye one must bear in mind that many drugs, especially those of an irritating character, produce an almost instant flow of tears, which dilutes the remedy at once, and must very much reduce its action. Still, the object of all our knowledge—bacteriological, pathological, and clinical—is really the treatment and relief of patients, an object which at times we are apt to lose sight of. A distinguished foreigner once said to me, after looking at a number of fundus cases in which we had been discussing the fine changes in the retinal vessels, "Yes, the diagnosis and the prognosis it is wonderful; but the treatment ————" The reproof contained in these words has often been brought home to me. It will be admitted on all hands that within the past few years great progress has been made in the study of diseases of the eye and the accurate correction of its optical defects and muscular disturbances. Can we say that a corresponding advancement has been made in the treatment by drugs?

It is chiefly in diseases of the conjunctiva and lacrymal apparatus that the salts of silver have been found useful.

Inflammation of the conjunctiva is among the commonest of eye affections, but it is only recently that attention has been paid to the different micro-organisms met with in the conjunctival sac, and the importance of the part they play in the various forms of inflammation of this mucous membrane fully recognized.

Neisser was the first to draw attention to the presence of the gonococcus in purulent conjunctivitis, and to establish

the fact that the virulence of this disease is due to the presence of this particular organism. After this Weeks described a specific bacillus found in cases of acute contagious conjunctivitis, and more recently Morax has discovered a diplobacillus in the secretions from cases of subacute conjunctivitis. In diphtherial conjunctivitis the bacillus of Loeffler is to be found, and trachoma is known to be due to the trachoma coccus. No doubt we shall soon have a scientific classification of the varieties of conjunctivitis based on their bacteriological characters.

It is well known that for the treatment of conjunctivitis we possess no specific, and we could hardly expect to have one when we consider the cause, symptoms, and pathological changes that take place in inflammation of a mucous membrane; hence almost every antiseptic and astringent in the *Pharmacopœia* has been tried at different times. The remedies now most frequently employed are boracic acid, sulphate of zinc, chloride of zinc, sulphate of copper, alum, tannic acid, borax and nitrate of silver.

For many years past the one drug on which reliance has been placed in all severe cases of purulent ophthalmia is nitrate of silver, and for this purpose it has proved invaluable. The efficacy of the drug depends probably chiefly upon its germicidal qualities, supplemented by its powerful astringent effects upon the vessels of the conjunctiva. The germicidal action is due to the base silver.

The employment of nitrate of silver requires great care and experience, and its use is accompanied by certain disadvantages and limitations, which may be summed up as follows:

1. Great pain and irritation.
2. Strong caustic effect.
3. Long-continued use may produce permanent staining of the conjunctiva.
4. The action of the drug is superficial, owing to the ready manner in which it is precipitated by albumen and chlorides.

When a solution of nitrate of silver is used to the conjunctiva it should be very lightly applied to the surface of the everted lids, and should not be allowed to come in contact with the cornea. Hence the drug is only safe in skilled hands.

When the conjunctival surfaces of the lids are brushed over with a 2 per cent. solution of this salt, a delicate bluish pellicle forms, which is in reality a very superficial slough, and is accompanied by an increase in the inflammatory symptoms. This in an hour or two commences to subside, the slough separates gradually, and the condition is one of improvement. After about twenty-four hours the inflammatory symptoms again show signs of increase, and then a second application may be called for. Great experience is required to know exactly when the remedy should be reapplied, and I have often found it difficult to decide this point.

The pain produced by the drug is acute, and may last for some hours even when cocaine is used. The pain is generally less and lasts a shorter time when there is a profuse purulent secretion; the silver then becomes quickly converted into albuminate of silver, a salt which is unirritating. This chemical change in the drug limits its action, and prevents it penetrating deeply into the tissue, and thus many organisms escape destruction.

The caustic effects of the drug may cause sloughing of the epithelial layer of the conjunctiva, and sometimes even of the deeper layers, and so produce permanent cicatrices.

Solutions of nitrate of silver continued for any length of time may produce permanent staining of the conjunctiva. This staining, which is called argyria, is most disfiguring, and is caused by the deposit of minute granules of silver in the lymphatic and perilymphatic structures.

On account of these drawbacks, efforts have been made to introduce some salt or compound of silver which may be as efficacious as the nitrate, while free from its disadvantages.

The following compounds have been supplied to us by the manufacturing chemist: Actol, itrol, argonine, argentamine, nargol, largin, and protargol.

I do not propose to weary you by the enumeration of a large number of cases, but intend to briefly sum up the results as they appear to me, in the hope that other members may be induced to state their opinion of a class of remedies, some of which should certainly retain a place among the drugs at our disposal. Nowadays we are flooded with so many new drugs that the tendency is to become over-skeptical, with the result that we may easily miss remedies that are of real value.

Actol, argentum lactas, $\text{AgC}_3\text{H}_5\text{O}_3$, is soluble in water, 1 in 15. When a little of this solution is applied to the conjunctiva a good deal of irritation is produced, almost as much as a drop of a 5 per cent. solution of nitrate of silver; actol possesses no advantages for ophthalmic work. It has been used extensively in surgery or dentistry.

Itrol, or argentum citras, $\text{Ag}_1\text{C}_6\text{H}_5\text{O}_7$, is a white, odorless non-caustic powder possessing powerful germicidal properties; it is soluble only with difficulty in water 1 in 4,000, but it may be used as a powder directly to the conjunctiva. The results I have obtained in a few cases in which I have tried it lead me to think that it is an excellent antiseptic with considerable penetrating power. It has been used chiefly in suppurative conditions of the conjunctiva, the cornea, and the lacrymal apparatus.

Argonine, or argentum casein, contains 4 per cent. of silver, readily soluble in warm or albuminous water, but with difficulty in cold water. Solutions are opalescent, and must be freshly prepared, as they do not keep well. I have found this preparation inferior to both protargol and largin.

Argentamine contains 2.6 per cent. of silver; it has been used in a large number of cases by Hoor, who has made extensive trials with 5 per cent. solutions; he speaks very highly of this drug, and considers it very penetrating in character, while producing but little irritation. It has the disadvantage of containing a very small amount of silver.

Nargol is a chemical compound of silver and nucleic acid, containing 10 per cent of silver; it is readily soluble in water, very stable, and is said to possess most of the properties of protargol; it may be used in 5 or 10 per cent. solution. Nargol is supplied as a light brown powder, forming in solution a brown fluid, which gradually becomes darker on exposure to light. Solutions of the drug cause no pain when introduced into the conjunctival sac, and it is pleasanter to use and less sticky than protargol. In acute contagious ophthalmia I have used 10 per cent. solutions, and have found them efficacious, cutting short the attack and leading to a rapid cure. It also acts well in suppurative conditions of the lacrymal sac. With regard to purulent ophthalmia my experience of the drug is not sufficient to justify me in forming an opinion. The remedy certainly seems worthy of further trial.

Largin is a synthetical compound containing 11.8 per cent. of silver combined with protalbin. It is soluble in water 1 in 10, forming a yellowish fluid, which becomes very frothy on shaking. The preparation is more stable than the nitrate of silver, and is not precipitated by albumen and chlorides. It should be protected from the light and must be freshly prepared, as it tends to become thick and sticky if kept for a few weeks. Its chief claim is that it contains a larger amount of silver than any of the other synthetical preparations. If a drop of a saturated solution be instilled into the conjunctival sac, it produces slight pain and irritation which soon pass off. In purulent ophthalmia I have found the drug somewhat uncertain. In a few cases it seemed to have a very marked effect in cutting short the attack and controlling the inflammation; in others the results have been disappointing, and I have arrived at the conclusion that in this disease it is distinctly inferior to protargol. In acute contagious conjunctivitis due to the Weeks bacillus the drug acts very well, cutting short the attack, and leading rapidly to complete recovery. In chronic conjunctivitis the remedy seems to have but little effect, and is certainly inferior to the zinc salts and alum. In trachoma the drug has a distinct beneficial effect in diminishing the amount of secretion and shortening the acute attacks; it may also be usefully employed after the operation of squeezing out the granulation with the roller forceps; in lacrymal cases, where there is regurgitation of pus or muco-pus from the lacrymal sac. After the canaliculus has been slit up, the sac and nasal duct may be syringed out with a 10 per cent. solution. I have had better results in these troublesome cases with this than with any other drug, and for its good effects in these cases alone the remedy is worthy of a permanent place among our list of remedies. It has been claimed for largin that it does not stain the conjunctiva, but this is certainly wrong. I agree with Stephenson that staining easily takes place, and on this account it is unwise to continue the use of this drug longer than two or three weeks at a time.

Protargol is a combination of silver with a vegetable albumen, not in the form of a metallic salt, but as a molecular compound. It contains 8.3 per cent. of silver and is not decomposed by albumen, alkalies, or weak hydrochloric acid; it is very soluble in hot or cold water, but requires protecting

from the light and should be freshly prepared, otherwise it is sticky to use and becomes very dark-colored. Experiments have proved that protargol is a weaker germicide than nitrate of silver. A 10 per cent. solution of protargol equals in its germicidal effects a 2 per cent. solution of nitrate of silver, but it has a much greater penetrating power and can therefore exert its germicidal qualities longer than the nitrate of silver, the action of which soon becomes stopped by the decomposition that takes place. Protargol is pleasant to use, has no caustic action, and causes little or no pain; it may be applied either as drops or brushed over the mucous membrane by means of a camel's hair brush or a cotton wool swab. When I first commenced the use of protargol I began with solutions of 2, 5, and 10 per cent., but I soon found that much better results were obtained with 10, 20, and 30 per cent. solutions; now in cases of purulent conjunctivitis I swab over the conjunctiva twice in twenty-four hours with a 30 per cent. solution, and even when the cornea is implicated this is no contraindication, the secretion quickly diminishes, the swelling of the lids goes down, and the case rapidly gets well. The good effects appear to be due to the double effect of the drug, first and foremost the germicidal action penetrating deeply into the tissue and so exerting its destructive influence on many of the bacilli which would otherwise escape; and secondly its astringent effect upon the conjunctival vessels. In acute contagious epidemic conjunctivitis due to the Weeks bacillus—an affection that was very prevalent last spring—I have found the drug give excellent results, curing the cases quickly. In trachoma, when the drug has been used in strong solution (50 per cent.), the secretion is soon diminished and the duration of the case shortened. In chronic conjunctivitis and blepharitis the drug in my hands has proved inferior to the zinc salts and mercurial ointment commonly used. In suppurative affections of the lacrymal apparatus the drug is especially useful after the canaliculus has been slit up. The sac and nasal duct may be syringed out first with a 5 per cent. solution of protargol, and if this is well borne the strength of the solution should be increased to 10 per cent. I have also used the drug in a few cases of abscess and infected ulcers of the cornea, but I have always found this treatment much less efficacious and more uncertain than the electric cautery.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

Friday, November 8, 1901.

DAVID LITTLE, F.R.C.S.E., M.D., President, in the Chair.

CHRONIC SERPIGINOUS ULCER OF THE CORNEA (MOOREN'S ULCER).

MR. NETTLESHIP read this paper. He said: The terms "chronic serpiginous ulcer," or "Mooren's ulcer," are preferable to "ulcus rodens," which is another name for rodent epithelioma. The paper is based upon an examination of 71 cases, 12 of which are his own. Bowman was the first to describe a case in detail (1849), but Mooren rightly has the credit of discovering the disease as a clinically distinct species in 1867. The ordinary character and course of the disease are described. Its usual duration is from four to twelve months, and no cases are included that lasted less than two months, though certain cases running a less chronic course may perhaps be of the same nature. The subjects are adults from 23 to 71; rather less than a quarter were under 40, just half between 40 and 60, rather more than a quarter over 60. A decided majority were males. In a large majority the attack in both sexes begins in the winter half of the year, and degenerative changes, perhaps merely senile, lowered surface temperature, and perhaps some congenital defect of quality of the corneal tissue in certain persons are suggested as predisposing causes. The course of the disease strongly suggests infection, but no special micro-organism has as yet been found. In more than one-fourth of the cases both eyes suffer, sometimes with an interval of years, and the disease is often exactly symmetrical in the two eyes. The prognosis is always grave, and is far worse when both eyes are attacked, only one in four of the double cases being arrested short of

*British Medical Journal.

total leucoma; whilst of the single cases more than half recover with some untouched cornea. The deeper parts of the eye remain healthy, and vision is determined by the final state of the cornea and pupil. Treatment should begin with cutting away the overhanging and half dead edge of the ulcer, and applying an escharotic or strong germicide to the advancing border thus exposed; the galvano-cautery is the best, pure carbolic acid and strong tincture of iodine probably come next; transplantation of conjunctiva over the ulcer appears useful occasionally. Though some cases are published as cured which would probably relapse, and though others go to universal leucoma in spite of all possible treatment, the results have been much better since the introduction of the cautery than before. Several old patients have done well, and several young ones very badly. Allusion is made to the "marginal atrophy" of the cornea recently described by Fuchs and to several other allied conditions of the cornea.

MR. TREACHER COLLINS asked if there was any relation between the age of the patient and the rate of progress of the disease. In two cases he had seen the ulceration of the cornea was most extensive, and yet the remaining opacity was not dense, and remarkably good vision remained. In one case the patient developed a crop of vesicles on the cornea and some patches of infiltration, all of which cleared up upon his doing paracentesis and iridectomy.

MR. LAWFORD related the case of a woman, aged 69, with no very definite specific history. In the right eye more than half the cornea was attacked; there was severe iritis but not much pain, and the temperature was normal. He cauterized the advancing edge, and after a second application it healed. Shortly afterwards it broke out again, and he then applied nitric acid without much good resulting. He then used liq. iod. daily, but it caused pain and did not do much good. Then the left eye became congested. An ulcer developed, which he burnt with the cautery. The right eye had no un-attacked cornea, and it was vascular and cicatrized. The left was again cauterized, and strong perchloride of mercury applied. After freely cutting away the edge and applying the galvano-cautery, it healed, but again broke down and was cauterized. This was repeated, and the patient still remained

under treatment. In another case, that of a man aged 46, healing was obtained after one application of the galvano-cautery.

MR. LANG, on one occasion after failure with the cautery, did an iridectomy, when the ulcer healed and the case did well. Since then he had treated others in the same way with good results, in all but one case.

MR. BRONNER thought that there were two distinct classes of cases, one in which the ulceration was superficial and one in which it was deep.

MR. SYDNEY STEPHENSON had published a case which occurred in a lady, aged 60, where the ulcer healed after two applications of the cautery. He then looked upon it as malignant, but this view he did not now hold. This disease seemed to occur about once in 17,000 cases, though more appeared to occur in some countries than in others. He thought the term "Mooren's ulcer" was a better term than serpiginous. Gifford had published a case in which the conjunctiva and sclera were involved in the ulcerative process, and last year an Italian observer isolated a bacillus which caused a disease when inoculated into the conjunctiva of rabbits.

THE PRESIDENT stated that he had only seen a few cases, and he described one which occurred in a lady in which he advised an iridectomy, as it had when he first saw it resisted all kinds of treatment. The patient refused to have the operation done, and he subsequently transplanted a corneal flap with good result. The disease followed influenza.

MR. BICKERTON asked if there was evidence of dacryocystitis in Mr. Nettleship's cases.

MR. NETTLESHIP replied that lacrymal sac trouble was very uncommon in these cases. With regard to age and prognosis he had not worked it out, but he did not think that there was anything striking in this respect. He had never noticed vesicles on the cornea, neither had he found that the inhabitants of some countries were more liable to the disease than others. The cases cited by Mr. Lawford and the President certainly made the prognosis look bad, but he was sure that it was much better since the introduction of the cautery.

KERATITIS IN THE NEWBORN.

DR. W. ERNEST THOMSON (Glasgow) read a paper on keratitis in the newborn, occurring after instrumental delivery, and resulting in each case in an almost identical rare form of opacity. All the mothers had contracted pelves, and in one with a conjugate of only $2\frac{3}{4}$ inches the delivery had been extremely difficult. Dr. Thomson saw two of these children very soon after birth, at which time three corneæ out of the four presented opacities in the anterior layers, with dulling of the surface but no vascularity. There was in all some bruising of the lids and conjunctivæ. The subsequent result was peculiar, for while one cornea became progressively more infiltrated, and that uniformly, the other two quickly improved; but the opacities, instead of remaining as central nebulae, developed into a white vertical linear scar with an adjacent area of much fainter haze. The third case had come under the care of Dr. Andrew Wilson at the fifth week. All signs of active keratitis had passed away, but an obliquely-placed linear scar remained precisely similar in character to those in the other children. Dr. Wilson suggested that the cornea became buckled by the pressure of the forceps squeezing the eye against the nasal wall of the orbit. Dr. Thomson pointed out that such cases if seen late might be diagnosed as congenital corneal opacity of intrauterine origin.

CARD SPECIMENS.

The following were shown: Mr. A. Hugh Thompson: Sections of an orbital tumor (? endothelioma, ? adeno-sarcoma).—Mr. Doyne: Tumor growing apparently from the optic disc.—Mr. Adams Frost: Some eye instruments used by native oculists in India, which had been presented to the Society by Major Drake-Brockman.—Mr. Maclehose: Rodent ulcer of upper eyelid.

DISCUSSION ON THE RELATION OF GONORRHOEA
TO DISEASE OF THE EYE (EXCLUDING PURU-
LENT OPHTHALMIA), IN THE OPHTHALMIC
SECTION AT THE MEETING OF THE
BRITISH MEDICAL ASSOCIATION
AT CHELTENHAM.*

MR. LAWFORD said: The relation of gonorrhœa to disease of the eye is a theme which, in at least one respect, encourages discussion. It is a subject concerning which our knowledge, or I should perhaps say our accurate knowledge, is contained within somewhat narrow limits, and therefore any means likely to add to our store of information should be welcome. This limitation of knowledge has also certain disadvantages, for the less we know concerning any subject the greater the temptation to theorize and to advance hypotheses which can be neither proved or disproved, and discussion of which is usually without profit.

The main question before us, as I understand it, has reference to the causal relationship which exists or is believed to exist between gonorrhœa and various pathological conditions of the eye.

To prevent misconception, I would definitely give notice that gonorrhœal ophthalmia is to be entirely omitted from the discussion.

I propose in the first instance, and as introductory to the strictly ocular part of our subject, to make a few remarks upon some of the more general pathological relationships of gonorrhœa.

The seriousness of gonorrhœal infection is now universally acknowledged, and due importance is attached to the recognition of lesions in any part of the human economy induced by such infection. It is, however, not very many years since Sir John Simon first drew attention to the now accepted fact that the sequelæ of gonorrhœa are in their results almost as baneful as those of syphilis. A more recent and perhaps not less authoritative statement has been made by Professor Osler in these words: "Gonorrhœa is one of the most widespread of infectious diseases . . . As a cause of ill-health and

*British Medical Journal.

disability the gonococcus occupies a position of the very first rank among its fellows. While the local lesion is too often thought to be trifling, in its singular obstinacy, in the possibility of permanent sexual damage to the individual, and still more in the 'grisly troop' which may follow in its train, gonorrhœal infection does not fall far short of syphilis in importance."

The discovery by Neisser, in 1879, of the specific micro-organism, designated the gonococcus, necessarily led to the abandonment of many pre-existing ideas concerning gonorrhœa and its complications. Some commonly accepted theories became untenable, and it seemed at first as if the microbic nature of the disease offered an easy explanation of all manifestations. Such is not the case, however, and it is nearly as difficult now to adequately explain some of the remote symptoms of gonorrhœa as it was before Neisser's meritorious discovery.

That the gonococcus is, so far as the genito-urinary tract is concerned, the active agent in the production of the usual lesions of gonorrhœa is an established fact. Its rôle in reference to gonorrhœal systemic infection, and the distal or so-called metastatic manifestations of gonorrhœa, has been less fully determined and is more difficult to define.

In a certain number of such cases (that is, systemic infection) the presence of the micro-organisms has been demonstrated in the blood, in the fluid within joints, in exudation around joints, in the endocardium and other tissues. In other cases examination of the fluid from inflamed joints has entirely failed to detect the gonococcus, and in others again there has been evidence of a mixed infection shown by the presence of staphylococci and streptococci. I am not aware that the gonococcus has ever been detected within the eyeball, except in cases of gonorrhœal ophthalmia in which perforation of the globe has occurred.

One of the most frequent manifestations of general infection in cases of gonorrhœa is arthritis. According to Warren it occurs in 2 to 3 per cent. of all cases.

The association of joint disease and gonorrhœa is said to have been first described by Selle and Swediaur in 1781. Brodie in 1818 and Astley Cooper in 1824 wrote upon this

subject, and drew attention to the occurrence of iritis in patients suffering from urethritis and inflamed joints. The latter writer reported the case of a man under his care, in whom arthritis and iritis occurred during an attack of gonorrhœa. This patient gave a history of two previous attacks of gonorrhœa during each of which he had suffered from inflamed joints and inflamed eyes.

The frequency of arthritis in patients suffering from gonorrhœa, and the resemblance of this joint affection to ordinary articular rheumatism (evidenced by the commonly-applied term "gonorrhœal rheumatism") has given rise not unnaturally to the supposition that the joint disease stands in some intimate and perhaps causal relation to other less common lesions—for example, iritis and endocarditis.

A more logical view, and one which gains greater acceptance, is that the *materies morbi*, whatever its nature, attacks these various structures independently, and that the simultaneous occurrence of arthritis and endocarditis, or of arthritis and iritis, is in a sense accidental; in other words, that the association is not a necessary one.

The gonorrhœal poison, like that of most infectious diseases, has certain seats of election in the tissues, and it is in no way surprising that evidences of the existence and activity of the poison should appear in several such tissues at or about the same time.

Fournier quotes the case of a man who had four attacks of gonorrhœa in five years. The first was complicated by ocular lesions only; the second and third by ocular and articular inflammation, and the fourth by arthritis alone.

It would, I think, be of little service to us at the present time to enter into any discussion as to the exact nature of gonorrhœal systemic infection. The question is complex and difficult, and for adequate treatment requires an intimate acquaintance with bacteriology and pathological chemistry. Considerable difference of opinion exists among writers on the subject, some maintaining that it is a pure gonococcus infection, others that it is a mixed infection by gonococci and pyogenic micro-organisms, and others again that it is a toxæmia induced by the poisonous products of the gonococcus, manufactured in the tissues primarily attacked.

The ocular affections which are known to occur in association with gonorrhœa (exclusive of the conjunctivitis due to direct inoculation by the gonococcus) are a form of conjunctival inflammation, scleritis and episcleritis, iritis and iridocyclitis, neuro-retinitis. Suppurative keratitis has been described in cases of severe pyæmic character. Iritis is probably the best known of these, although conjunctivitis is said to occur with greater frequency.

Like all the remote manifestations of gonorrhœa, the above-mentioned lesions are much more common in the male sex. The frequency of ocular lesions in gonorrhœa is difficult to gauge; there are but few statistics to guide us. Fournier met with ocular troubles 15 times in 39 cases.

Metastatic conjunctivitis is the term usually employed to designate an inflammation of the conjunctiva occurring in association with gonorrhœa, but which differs markedly in its characters from true blennorrhœa of the conjunctiva. The history of the views entertained by medical men as to the nature of this affection is of interest, and well demonstrates how the progress of knowledge compels thinking minds to alter, or be prepared to alter, their beliefs.

Older observers considered all distant symptoms occurring in the subjects of gonorrhœa as metastases. Their successors, about the time of Mackenzie, while still accepting dubiously the theory of metastasis, recognized two varieties of conjunctivitis in gonorrhœa, one undoubtedly due to inoculation, the other and milder form of less certain origin. The discovery of the gonococcus caused the pendulum of medical thought to swing, and all instances of conjunctivitis were ascribed to direct inoculation.

More recent investigations seem to show that comparatively mild attacks of conjunctival inflammation occur during gonorrhœa which are not due to direct inoculation of the conjunctiva, the micro-organism of gonorrhœa being absent from the conjunctival tissue and discharge. I am inclined to think that there is sufficient evidence to show that such a variety of conjunctivitis does occur, but we shall do well to exercise caution in accepting such evidence as conclusive. There is no reason to doubt that mild attacks of conjunctivitis can be excited by inoculation with the gonorrhœal poison which from

various circumstances has become attenuated. Bacteriological examination is essential before making a diagnosis.

There are points of practical value in distinguishing between the two varieties of conjunctivitis in reference to prognosis and treatment, which I need not discuss at this time. Whether the retention of the term "metastatic" as applied to this form of conjunctivitis is desirable, and whether—excluding direct inoculation—we can suggest a reasonable explanation of the inflammation, are questions which must also be passed by at present.

The association of iritis and irido-cyclitis with gonorrhœa is a common one, and has been recognized for many years. For much valuable information on this subject we are indebted to Förster's able article in the first edition of the *Graefe-Saemisch Handbuch*. There is no reasonable ground for doubt that the iritis is a manifestation of systemic gonorrhœal infection. The recurrence of iritis in successive attacks of gonorrhœa, and its frequent occurrence simultaneously with other well-known gonorrhœal complications, such as arthritis, furnish sufficient evidence on this point.

Gonorrhœal iritis, in the large majority of cases, occurs concomitantly with arthritis. There seems no doubt, however, that its onset may precede that of joint inflammation, or that iritis may be present in cases in which there are no arthritic complications. Fournier states that in a series of cases observed by him the joints and the eyes were not usually affected simultaneously.

These two manifestations of gonorrhœa not only occur concomitantly in many instances, but also possess certain characteristics in common. They are both prone to relapse, and they leave behind them an apparent vulnerability of tissues which may and often does persist for a very long period. An eye which has been attacked by gonorrhœal iritis and a knee-joint which has been the seat of gonorrhœal arthritis are liable to recurrences of inflammation without any fresh gonorrhœal infection. This liability may last for years.

It has been suggested that gonorrhœa may be the cause of iritis developing for the first time long after all local and general signs of gonorrhœa have disappeared.

I have not found sufficient evidence to enable me to form

a definite opinion on this question. I am at present very skeptical whether it is justifiable or indeed reasonable to consider a long antecedent gonorrhœa as the cause of an attack of iritis in an eye not previously affected.

Scleritis and episcleritis of gonorrhœal origin, or at least associated with gonorrhœa, are much less common than iritis. Like the latter they are usually met with in patients with joint inflammations, and share the clinical features of iritis so far as intractability and liability to relapse are concerned.

Among the less common eye affections attributed to the poison of gonorrhœa are retinitis, apparently of thrombotic character, and neuro-retinitis. Galezowski has suggested that the cases of retinitis are instances of thrombosis of retinal arteries due to an obliterating endarteritis, set up by accumulation of gonococci in the vessels.

A few cases of neuro-retinitis following or complicating gonorrhœa have been recorded. Recovery ensued, but in one instance a recrudescence of the gonorrhœa was accompanied by a relapse of the retinitis. These cases are so few in number that it would be rash to generalize from them. They should serve to arouse our attention to the possibility of retinal lesions being caused by the gonorrhœal poison. Bilateral dacryo-adenitis has also been reported in a case of gonorrhœa.

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MR. R. J. HAMILTON related a case of gonorrhœa, which at the end of three weeks was followed by severe irido-cho-roiditis. This was preceded by a rigor which Mr. Hamilton

attributed to septic absorption from a urethra previously damaged by strong injections. There was no arthritis or anything to justify the idea that the condition was one of general gonorrhœal infection. He deprecated the use of the word "metastatic," and preferred to look upon it as a pyæmic affection.

MR. R. A. YELD had recently analyzed 159 cases of primary iritis taken from the casebooks at St. Bartholomew's Hospital. He found 56 adult males among these in which there was no evidence of syphilis. Of these no fewer than 28, or 50 per cent., had suffered from gonorrhœa. Of these 28, 26 had a history of arthritis past or present. Finally, in 13 of these 26, the association of gonorrhœa, arthritis, and iritis was so close as to justify the term "gonorrhœal iritis." This was equal to eight per cent. gonorrhœal cases out of 159 cases of primary iritis. In another investigation of 40 severe cases of gonorrhœal arthritis, there were eight women presenting no iritis, and 32 men of whom five (15.6 per cent.) had iritis as a complication.

DR. A. DARIER said that many cases of iritis he had seen were due to gonorrhœal arthritis; he had frequently seen it follow ophthalmia neonatorum, and he thought that it was due to general infection. Possibly it followed rough treatment of urethritis with rupture of the mucous membrane or epithelium. He thought that some cases of iritis following metritis or endometritis were due to this cause.

MR. HENRY POWER thought it highly probable that secondary affections of the eye consequent on gonorrhœa might easily result from lesions of the urethra and required such lesions before they would occur. Considering the thousands of cases of gonorrhœa he thought secondary ophthalmic affections must be very rare.

MR. RICHARDSON CROSS said that the gonorrhœal origin of iritis was one he always kept in mind, and he frequently found cases of this nature.

LIEUTENANT-COLONEL DRAKE-BROCKMAN said that he had frequently seen gonorrhœal ophthalmia with accompanying iritis in natives of India. The left eye was most frequently infected and iritis followed in that eye only. The gonorrhœal or gleet discharge was usually present at the time of the

ocular disease, though so little attention was paid to the primary disease that it was unlikely any surgical injury could have been inflicted at that period. He, however, thought that a lesion of the urethra, however produced, was likely to cause absorption and general infection.

MR. SYDNEY STEPHENSON mentioned two cases he had recently treated in which arthritis followed gonorrhœal conjunctivitis.

MR. DEVEREUX MARSHALL drew attention to the transparent exudation which was so often present in the anterior chamber in cases of gonorrhœal iritis. He did not know if the gonococcus was present in it, as he had never done a paracentesis in this condition.

MR. L. V. CARGILL said that in a very large proportion of cases of rheumatic iritis there was a history of gonorrhœa especially in men, and most of them showed the so-called "lens-like" exudation in the anterior chamber. He considered Dr. Darier's observations very interesting, and thought that we should now be rather between Scylla and Charybdis in scarifying the excessively chemotic conjunctiva of a gonorrhœal ophthalmia.

MR. G. W. ROLL thought there was a marked difference between gonorrhœal and an ordinary rheumatic arthritis. He asked Mr. Lawford if he had found the salicylates of any benefit in gonorrhœal iritis.

Reply.—MR. LAWFORD, in reply, said he had not seen females affected with gonorrhœal iritis, and he considered the salicylates of some service in these cases.

PAMPHLETS RECEIVED.

"Leçon d'Ouverture du Cours," by F. de Lapersoune, M.D.

"Immature Cataract and Its Treatment," by G. E. de Schweinitz, M.D.

"The Evolution of the Ophthalmoscope and What It Has Done for Medicine," by S. Theobald, M.D.

"On the Measurement of the Intraocular Base Line, and the Size of the Meter-Angle," L. Howe, M.D.

ABSTRACTS FROM MEDICAL LITERATURE.

BY W. A. SHOEMAKER, M.D.

ST. LOUIS, MO.

A CASE OF ACUTE GLAUCOMA INDUCED BY COCAINE.

Simeon Snell (*Ophthalmic Review*, February) has used cocaine almost daily for seventeen years, and during that time has had it induce glaucoma in only one case. Two years previous to using the cocaine the author had examined the patient and found her eyes healthy and vision normal. A one per cent. solution of cocaine was used by her medical adviser to relieve an uncomfortable feeling in her right eye. This solution was used four times. Four days later Snell was consulted, and he found the tension + 2, pupil dilated, cornea steamy and vision reduced to ability to seeing fingers indistinctly at close range. The eye not improving under the use of eserine, for one day, an iridectomy was done with very satisfactory results.

EMPLOYMENT OF SUPRARENAL EXTRACT BY THE OCULIST.

L. Thilliez (*Jour. des Sciences Med. de Lille*, Sept. 14) has gotten very satisfactory results from the use of suprarenal extract in ocular affections. He uses a solution composed of equal parts of distilled water and the dried suprarenal powder, carefully sterilized and preserved in glass receptacles holding one gramme. It is a brownish liquid and can be preserved indefinitely in a sealed tube. The profound anæmia which is induced lasts from one to two hours, according to the quantity used. Its vasoconstrictor action is greatest on the conjunctival vessels, but is also marked on the sub-conjunctival vessels. Its action is constant, and the author recommends its use in severe conjunctival injection, keratitis, iritis, and glaucoma.

A CASE OF TUBERCULOSIS OF THE CONJUNCTIVA.

Howard F. Hansell (*Annals of Ophthalmology*, July) reports a case and reviews the literature of the subject. The causes are self-infection, metastasis and traumatism. The palpebral conjunctiva is most frequently affected. The tu-

bercules appear in the form of miliary ulcers, subconjunctival nodules resembling the granules of acute trachoma, hypertrophied papillæ and pedunculated tumors. Satler mentions lupus as one of the forms. For diagnosis tuberculosis of other organs and microscopic examination must be largely depended on, as tubercle bacilli are rarely found. Many cases are masked by trachoma, and others diagnosed as trachoma are tuberculous. The methods of treatment most strongly endorsed are excision and the galvano-cautery. When an operation is advisable the inflamed section and the healthy zone around it should be excised. Also the preauricular and other glands when they are involved. When an operation is not advisable the galvano-cautery should be used.

THE USE OF PROTARGAL TO PREVENT OPHTHALMIA IN
THE NEW BORN.

J. Piotrowski (*Centralblatt f. Gynäkal.*, Aug. 3) considers protargal the best preventive of ophthalmia neonatorum. He first cleanses the eyes with a 30 per cent. solution of boric acid, and then uses a 10 per cent. solution of protargol. In a series of 1030 cases thus treated there was not one instance of blenorrhœa and only 1.2 per cent. of cases of secondary catarrh. A stronger solution increased the percentage of secondary catarrh.

ON EMBOLISM OF THE CENTRAL ARTERY OF THE RETINA.

C. Schweigger (*Archives of Ophthalmology*, September) questions the frequency of embolism of the central artery, doubt as to which was expressed by him more than thirty years ago; only in recent years has the anatomic basis been given for these cases of sudden blindness, by the demonstration of endarteritis with narrowing of the lumen, which accompanies various forms of retinal diseases. The view that sudden blindness with cloudiness of the disc and retina depends upon embolism arose only because the appearance that was previously termed infiltration was later termed embolism. Graefe's case teaches that embolism is not immediately followed by cloudiness. On the contrary, the narrowing of the retinal arteries from endarteritis must cause slowing of the blood current, which may produce infiltration.

THE
AMERICAN JOURNAL
OF
OPHTHALMOLOGY

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1901.

EDITED BY

ADOLF ALT, M.D.

ST. LOUIS, MO.

1901.

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THE AMERICAN JOURNAL OF OPHTHALMOLOGY

EDITED AND PUBLISHED BY

ADOLF ALT, M.D.

ASSISTANT EDITOR,

W. A. SHOEMAKER, M.D.

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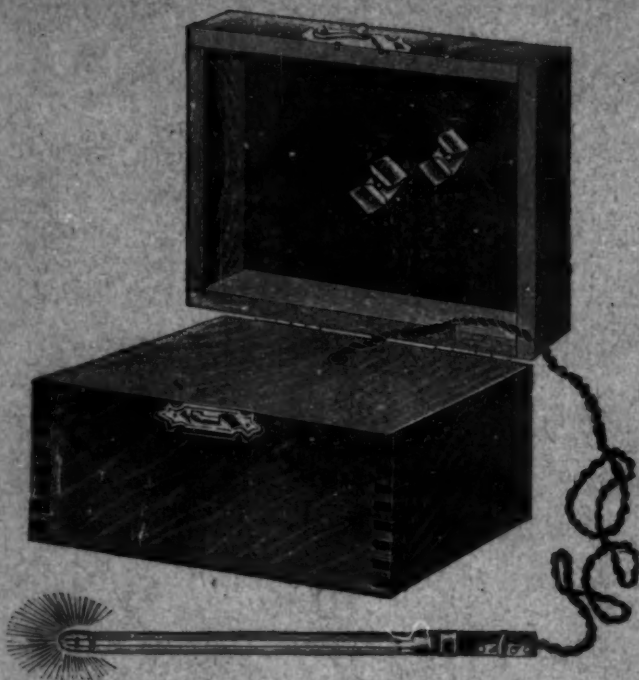
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(LIQUID HÆMOGLOBIN PURIFIED.)

THE BEST COMBINATION OF IRON is that form in which Nature presents it, viz.: the organic form. For this reason we have selected the name of our preparation to be

ORGANO-FERRIN--(WIEGAND.)

Our chemist, Herm. Wiegand, pupil of J. von Liebig, has devised a special process by which the iron in its natural organic combination, as it is found in live blood, is offered to the profession in an agreeable and palatable form. All objectionable features of similar preparations have been overcome in this product, embodying all that can be desired from an ideal iron preparation; does not affect the teeth nor constipate or produce gastric disturbances. It is a true food for the blood, indicated:—

INTERNALLY—In Anæmia, Brain-Fag, Torpidity of Stomach, Wasting Diseases, Reconvalence from Acute Diseases, Copious Loss of Blood.

EXTERNALLY—As a Direct Nourishment and Stimulant to Cellular Tissue, giving surprising results in healing (by direct application) Old Running Sores, Ulcers, Bed-Sores, etc.

DOSE—Internally, from one teaspoonful to one tablespoonful diluted with seltzer water, white wine, milk, etc.

...PREPARED ONLY BY...

WIEGAND CHEMICAL CO., ST. LOUIS, MO.

